

Claims

1. A panel comprising two or more heterokaryons wherein each of said heterokaryons produces a different variant of a multimeric protein and each
5 heterokaryon is formed by fusing a first and a second fungal parent strain, wherein said heterokaryon requires the presence of both fungal parent nuclei for survival, said first and said second parent fungal strain contains an exogenously supplied nucleic acid molecule that encodes a variant of a subunit of a multimeric protein and where said first and said second parent strains are homozygous for all heterokaryon compatibility alleles.

2. The panel of claim 1 wherein each of said variants of a subunit of a multimeric protein are naturally occurring subunit variants.

3. The panel of claim 1 wherein each of said variants of a subunit of a multimeric protein are not naturally occurring subunit variants..

4. The panel of claim 1 wherein each of said multimeric proteins is an antibody molecule.

5. The panel of claim 1 wherein each of said multimeric protein is secreted into the medium.

6. A kit comprising one or more containers that contains the heterokaryon
25 panel of claim 1.

7. A method for producing a panel of heterokaryons comprising two or more heterokaryons wherein each of said heterokaryons produces a multimeric protein comprising the steps of:

30 fusing two or more first and second fungal parent strains, said first and said second parent fungal strains containing an exogenously supplied nucleic acid molecule

that encodes a variant of a subunit of a multimeric protein and where said first and said second parent strains are homozygous for all heterokaryon compatibility alleles and selecting two or more heterokaryons thus formed to generate said panel, wherein said heterokaryon requires the presence of both fungal parent nuclei for survival.,

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8. The method of claim 7 wherein said variant of a subunit of a multimeric protein is a naturally occurring subunit variant.

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9. The method of claim 7 wherein said variant of a subunit of a multimeric protein is not a naturally occurring subunit variant.

10. The method of claim 7 wherein said multimeric protein is an antibody molecule.

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11. The method of claim 7 wherein said multimeric protein is secreted into the media under appropriate conditions.

12. The method of claim 7 wherein said first and second parent fungal strains is fused using a pulsed electric field.

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13. A method to produce a panel of variants of a multimeric protein, said method comprising the step of culturing the heterokaryon panel of claim 1 under conditions in which the exogenously supplied nucleic acid molecules are expressed so as to form variants of a multimeric protein.

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14. A method to identify an agent that binds to a member of a panel of variants of a multimeric protein, said method comprising the steps of incubating the panel of variants of claim 13 with an agent to be tested and determining whether said agent binds to one or more members of said panel.

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